pit. It is curious that Mr. Borlase calls the Armoy skull (p. 993) dolichocephalic with an index of 0·77; the limit of dolichocephaly usually adopted is 0·75.

After touching on nigrescence and other physical features, Mr. Borlase concludes his work with a dissertation on the Invasion Saga-group of the Irish manuscript romances. It will be observed that he has practically left the dolmens: but his thesis is that the dolmens and all the other tangible remains of prehistoric Ireland have nothing to do with the extant legends. With singular ingenuity Mr. Borlase develops a two-fold theory about these writings: first, that they are a barbaric version of the historical *Volkswänderung;* and, secondly, that they are native to the south coast of the Baltic, being only Irish in the sense of having become naturalised there. Conaing's tower on Tory Island is razed, to be rebuilt on Rügen; and all the other sites and scenes are transported in a manner equally calculated to disturb the repose of the honoured ghosts of Keating and the Four Masters. Clearly this novel theory leaves all Irish remains unaccounted for by divorcing from them the legends which, in some measure, fit them with tolerable accuracy; and transfers the legends to a soil where there are neither tangible remains, nor local folklore, with which they can be compared. It would be easy to pick holes in some of Mr. Borlase's etymologies, such as the suggested connection between Partholan and the Lombards, which reminded us of nothing so much as the schoolboy's correlation of eel-pie with a pigeon: but space forbids our saying more than that we do not believe the last word has yet been said on the mystery of the Irish romances.

We have read these three handsome volumes with interest and pleasure, not unmixed with regret that a little more judicious pruning was not employed in both letterpress and illustrations. Many of the pictures of dolmens might as well have been omitted, since in the absence of plans they are useless.[1] The money thus saved would profitably have been expended in improving the quality of the remaining cuts, and in remunerating a competent proof-reader.

One more complaint in conclusion. Why does Mr. Borlase—a scientific archæologist—speak of the Clonmel tragedy of two years ago as a witch-burning case?

R. A. STEWART MACALISTER.

HUMAN EMBRYOLOGY.

Human Embryology. By Ch. S. Minot, Professor of Histology and Human Embryology, Harvard Medical School, Boston. Pp. xxiii + 815. Large 8vo. (New York, 1892. English edition: Macmillan and Co., Ltd., 1897.)

IT is now five years since the publication of this work in America, but it is not to be supposed that because the science with which it deals has all the while been making rapid progress, it is on that account to be regarded as already out of date. For the nature of the book is of such a character as to constitute it a permanent work of reference in the subject; in which respect, although not in its scope and intention, it resembles closely the comparative embryology of Francis Balfour.

This is not the place to enter into a discussion of any of the immense mass of details which Prof. Minot has accumulated in his work, which he himself confesses to have occupied ten years of his life, nor would the space at my disposal enable me to do so, except in a most inadequate manner. Suffice it to say that there is no part of the subject which is not treated by the author in the most complete manner possible within the limits of a text-book. Beginning with an account of the structure of the uterus in its varying functional conditions, the history of the sexual elements, and a discussion of theories of sex and heredity, the author attacks the main subject of the work by an account of the segmentation of the ovum and the formation of the germ layers. The formation and destination of the primitive embryonic organs, the origin of the blood and blood-vessels, of the urogenital system, and of the archenteron are next treated of, and then follows a most important section of the work, in which the human embryo is dealt with as a whole, and followed through all its known stages. Accompanying this account is a complete and original description of the appendages of the ovum and their relation to the uterine wall. Finally the development of each tissue and organ is separately dealt with; and not only the changes of form, but the histogenesis of the organs also—a subject often left untouched in text-books of embryology—are considered in abundant detail. Each chapter—almost each page—is a mine of information, so that the book will be an essential companion of every one who may be working at vertebrate embryology. For although the author has not departed more than was possible from the scope of his work as indicated by its title, there is so much that is common in the development of all vertebrates that much of our knowledge of human embryology is primarily founded on facts observed in other mammals, and even in lower vertebrates, and reference must necessarily be constantly made to these.

The subject is so big, that it is obviously impossible for any one during a much longer period than ten years, and even if he should be in possession of the needful material, to attempt to give any account of it which shall be based upon his own investigations. Short of this, however, he may in many cases verify the statements of others; and when this does not prove possible, he may at least subject them to so critical an examination as to lend an additional value to them by reason of the stamp of his criticisms. These two processes Prof. Minot has very fully carried out in each subject which he has dealt with; and when to this statement it is added that some parts of the subject are based wholly upon the author's investigations, it will be seen that, exactly as with Balfour's book above referred to, there is a colour of originality pervading the whole work, which greatly tends to enhance its value.

Prof. Minot obtained his training in embryology and in the allied biological sciences mainly in German schools, and he is naturally thoroughly imbued with German methods of expression. This does not, however, in my opinion, justify him in bodily transferring German terms into the text of an English book without any attempt to furnish either an English equivalent, or an

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[1] A perspective sketch, or photograph, of any structure is of little or no (generally no) value without a plan. We trust that all promoters of photographic surveys realise this.

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equivalent easily coined according to the convenient and acknowledged methods of scientific word-making from the Greek or Latin. One gets accustomed to such a word as Anlage, which is in constant use throughout the book, and after a time begins to forget that it ever was anything but pure English; but I confess to being still somewhat staggered whenever I come across such phrases as that leucocytes "are transformed into *Bildungsgewebszellen*," that certain fibres are "situated in the Randschlier of the dorsal zone of His," and, only two lines further, that "the Rautenlippe during the fifth week buries the solitary tract." Prof. Minot belongs to a University which justly boasts having produced writers of as good and as pure English as can be met with anywhere, and he has himself a clear and trenchant style. It seems a pity, therefore, that he should not have stuck to his own language, or, as an alternative, he might have written his book wholly in German. It is no doubt sometimes difficult to get a good short equivalent of some German expressions, which include the meaning of a whole sentence in a single word; but the same difficulty has been met and combated successfully by other writers; and even if one has to resort to a phrase of two or three words to express in English the idea which one compound German word will imply, it is better, it seems to me, to adopt this plan than to intercalate into an English sentence foreign words, which can only be properly understood by those who are very familiar with the tongue they are written in. Your French scientific writers are never guilty of this fault—they have too much respect for their own language; but the practice is not an uncommon one with English and American scientific men, and ought, in my opinion, to be resorted to either not at all or only on the rarest possible occasions.

This is, however, a very minor fault, and one which in no way affects the scientific value of the book. And it is no exaggeration to say, in spite of the modest manner in which the author introduces his treatise to the public in the preface, that the work before us constitutes a monument of erudition in the difficult and complex subject of which it treats.

E. A. SCHÄFER.

OUR BOOK SHELF.

Catalogus Mammalium tam viventium quam fossilium. A Doctore E. L. Trouessart, Parisiis. Nova Editio (Prima completa). Fasciculus I. Primates, Prosimiæ, Chiroptera, Insectivora. Fasciculus II. Carnivora, Pinnipedia, Rodentia I. 8vo. (Berolini: R. Friedländer und Sohn, 1897.)

A NEW catalogue of Mammals is much wanted, and will be of great use to the many workers in that group of animals. This important branch of the Vertebrata appears to have been rather neglected by the authorities at the British Museum, who have recently issued many excellent volumes on the Birds, Reptiles, Batrachians and Fishes in the National Collection, but have done little work on the recent Mammals, although they have catalogued the fossil members of the group. We are glad, therefore, that Dr. Trouessart has taken up the subject, although he merely gives us a systematic list of names and localities, without any descriptions. Two parts of his "Catalogus Mammalium" are already issued. The first contains the Primates, Prosimiæ, Chiroptera and Insectivora; and the second, the Carnivora, Pinnipedia and the first portion of the Rodentia (Protrogomorpha and Sciuromorpha). We presume that a third part will finish the work. Up to the end of the second part, Dr. Trouessart, who includes both recent and external forms, has catalogued 1294 species. Of each of these the principal references and synonyms are given, and a short list of localities. We venture to think that it would have been better if the names of the recent and fossil species had been a little more clearly distinguished in the type. The fossil mammals are only recognisable in the present work by the "dagger" placed before the name, which may be easily overlooked. In most respects, however, the work appears to have been performed in a satisfactory manner, though it would not be difficult to point out a certain number of slips and errors. We have, nevertheless, no doubt that the volume when complete will be of much use for reference, and will supply a quantity of much needed information.

Essais sur la philosophie des Sciences Analyse-mécanique. Par C. de Freycinet, de l'Institut. (Paris: Gauthier-Villars, 1896.)

TREATISES of this nature are popular in France, to cite only the "Réflexions sur la Métaphysique du Calcul Infinitésimal" of Carnot, and the "Méthodes dans les Sciences de Raisonnement" of Duhamel; the only English equivalent would be Jevons's "Principles of Science."

M. de Freycinet has employed the leisure of the arduous duties of a Minister of War, in writing these essays, in which a philosophical view is taken of various sciences, treated in ordinary language, and addressed to cultivated minds. In the deep concentration now required in the specialisation of science, books such as this will prove very valuable to give the worker, too much absorbed in his own subject, a general perspective glance of what others are doing, devoid of all repulsive technicalities. We find on p. 158: "Il ne suffit pas d'avoir la notion claire de la masse. Il fait aller plus loin. Pour les besoins de la Dynamique il est nécessaire de *Savoir* chiffrer les masses;" . . . and again on p. 162, "Une quantité d'eau peu inférieure a 10 décimètres cubes, soit 9 litres 8088 . . .; le nombre habituellement désigné par la lettre *g*; voila l'unité de masse."

This will please Prof. Perry; and it is the definition of Euler, Lagrange, Laplace, Poisson, &c.; but, as a recent discussion has shown, the definition is considered heretical in certain educational quarters.

The Metric System is not absolutely sacred, even to a former Minister of France. M. de Freycinet brings forward, on p. 186, his proposal to shorten the metre, or rather to make *g* at Paris the unit of length, the sexagesimal second being the unit of time; while others would make the seconds pendulum at Paris the unit of length.

G.

Wild Flowers of Scotland. By J. H. Crawford, F.L.S. Pp. 228. (London: John Macqueen, 1897.)

A NUMBER of people object to an abrupt introduction to nature; they prefer to flit around her like a butterfly around a flower, merely to take a casual glance at different aspects. To confront people of this temperament with a bare fact would be to destroy the interest—aimless though it be—they have in science. Wherefore such books as the one before us are written—books in which pretty things and picturesque scenes are viewed "in contemplative fashion" and poetic state of mind. The present work is not without a value; for it certainly teaches something about a few of the wild flowers of Scotland, but we fancy it will be read more for its easy style of composition than for the facts it contains.

The Science of Speech. By Prof. Alexander Melville Bell. Pp. 56. (Washington, D.C.: The Volta Bureau, 1897.)

THE purpose of the author of this work is to define the actions of the mouth and the vocal organs in the production of speech, and express them by a species of

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